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From: Fidei, David
Sent: Monday, August 14, 2006 10:56 AM
To: Gravini, Steve
Subject: FW: Litigation search results - 09/767834

FYI - for Reissue 10/060204

-----Original Message-----

From: Catlin, Karen (ASRC)
Sent: Friday, August 11, 2006 1:41 PM
To: Fidei, David
Subject: Litigation search results - 09/767834

Good afternoon -

The visual representation and results of the litigation search you requested for US Patent No. 6,332,280 are attached.
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Karen

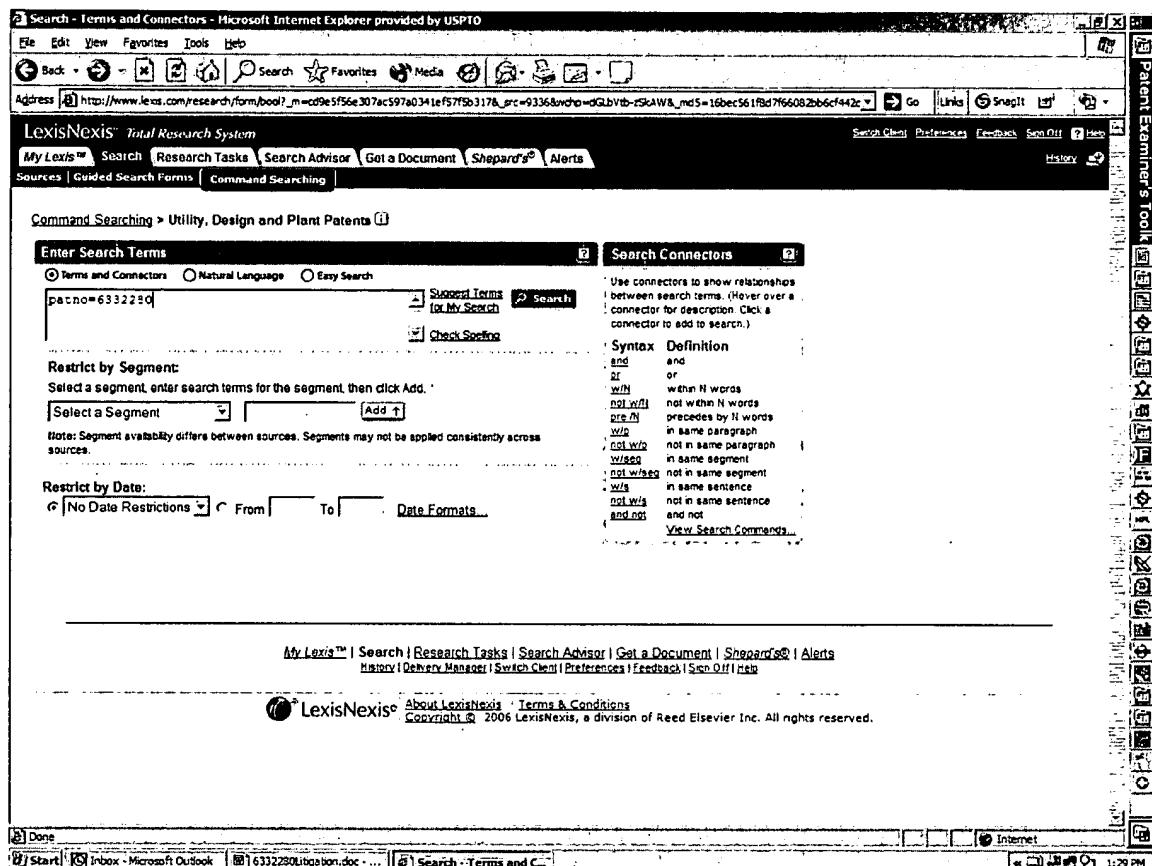


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Karen Catlin
Reference Librarian (ASRC Aerospace)
Scientific and Technical Information Center
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Pat. No. 6332280 (Copy w/ Cite)

Source: Command Searching > Utility, Design and Plant Patents [1]

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767834 (09) 6332280 December 25, 2001

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6332280

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December 25, 2001

Vacuum processing apparatus

REISSUE: February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

INVENTOR: Kato, Shigekazu - Kudamatsu, Japan (JP); Nishihata, Kouji - Tokuyama, Japan (JP); Tsubone, Tsunehiko - Hikari, Japan (JP); Itou, Atsushi - Kudamatsu, Japan (JP)

APPL-NO: 767834 (09)

FILED-DATE: January 24, 2001

GRANTED-DATE: December 25, 2001

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w/s	in same segment
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w/s	in same segment
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w/s	in same sentence
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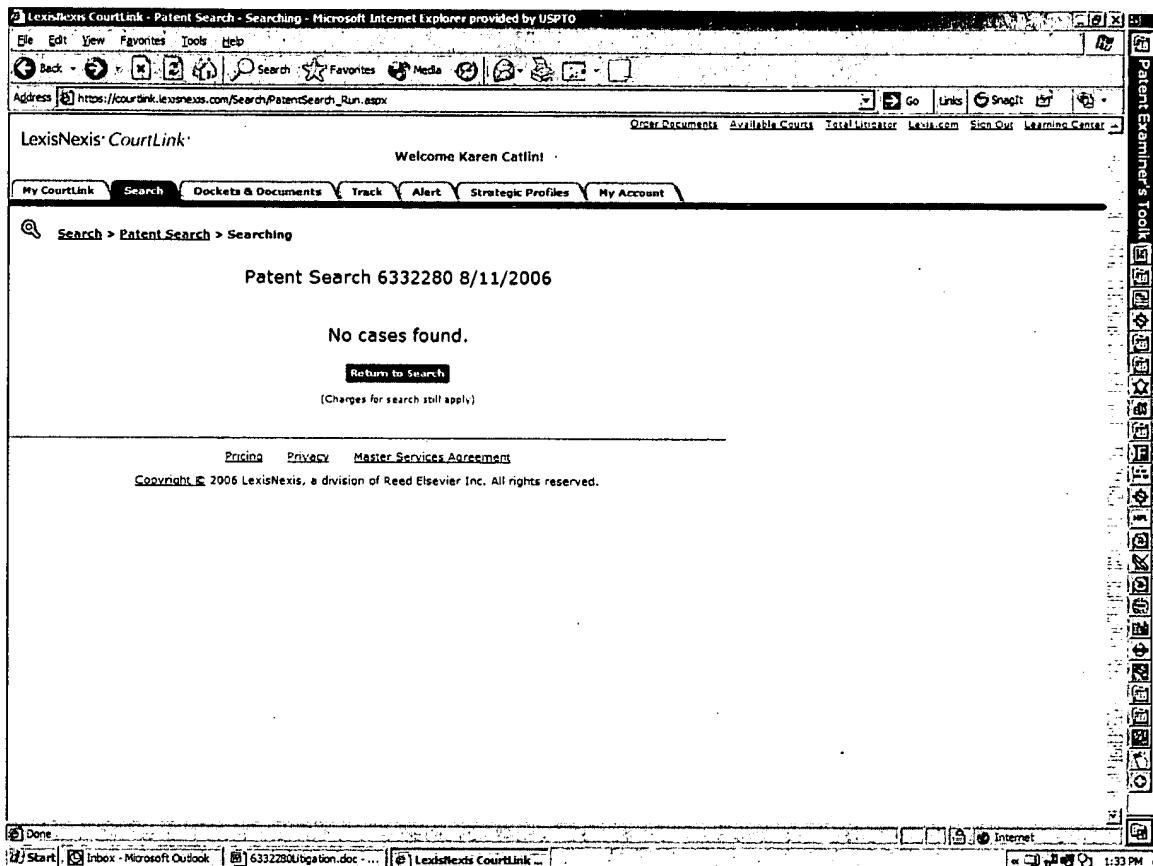
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Utility, Design and Plant Patents

patno=6332280

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1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6332280

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December 25, 2001

Vacuum processing apparatus

REISSUE: February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

INVENTOR: Kato, Shigekazu - Kudamatsu, Japan (JP); Nishihata, Kouji - Tokuyama, Japan (JP); Tsubone, Tsunehiko - Hikari, Japan (JP); Itou, Atsushi - Kudamatsu, Japan (JP)

APPL-NO: 767834 (09)

FILED-DATE: January 24, 2001

GRANTED-DATE: December 25, 2001

ASSIGNEE-AT-ISSUE: Hitachi, Ltd., Tokyo, Japan (JP), Foreign company or corporation (03)

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Patent Number :
US2001037585 A1 20011108 [US20010037585]

Patent Number 2 :
US6332280 B2 20011225 [US6332280]

Title :
(A1) Vacuum processing apparatus and operating method therefor

Patent Assignee :
(B2) HITACHI LTD (US)

Patent Assignee :
Hitachi, Ltd., Tokyo [JP]

Patent Assignee 2 :
(B2) HITACHI LTD (US)

Inventor(s) :
(A1) KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

Application Nbr :
US76783401 20010124 [2001US-0767834]

Filing Details :
Divsn of US461432 19991216 [1999US-0461432]
Cont. of US177495 19981023 [1998US-0177495]
Cont. of US061062 19980416 [1998US-0061062]
Cont. of US882731 19970626 [1997US-0882731]
Divsn of US593870 19960130 [1996US-0593870]
Cont. of US443039 19950517 [1995US-0443039]
Divsn of US302443 19940909 [1994US-0302443]
Cont. of US096256 19930726 [1993US-0096256]
Cont. of US751952 19910829 [1991US-0751952]
Continuation of: US6012235
Continuation of: US5950330
Continuation of: US5784799
Division of: US5661913
Continuation of: US5553396
Division of: US5457896
Continuation of: US5349762
Continuation of: US5314509

Priority Details :
JP22532190 19900829 [1990JP-0225321]
US6106298 19980416 [1998US-0061062]
US9625693 19930726 [1993US-0096256]
US17749598 19981023 [1998US-0177495]
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US44303995 19950517 [1995US-0443039]
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US59387096 19960130 [1996US-0593870]
US75195291 19910829 [1991US-0751952]
US76783401 20010124 [2001US-0767834]
US88273197 19970626 [1997US-0882731]

1 / 1 LGST - @EPO

Patent Number :

US2001037585 A1 20011108 [US20010037585]
US6332280 B2 20011225 [US6332280]

Application Number :

US76783401 20010124 [2001US-0767834]

Action Taken :

20020604 US/RF-A
REISSUE APPLICATION FILED
EFFECTIVE DATE: 20020201

Update Code :

2003-22

1 / 1 CRXX - @CLAIMS/RRX

Patent Number :

6,332,280 A 20011225 [US6332280]

Patent Assignee :

Hitachi Ltd JP

Actions :

20020201 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20020604
REISSUE REQUEST NUMBER: 10/060204
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3749

Reissue Patent Number:

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6332280

December 25, 2001

Vacuum processing apparatus

REISSUE: February 1, 2002 - Reissue Application filed Ex. Gp.: 3749; Re. S.N. 10/060,204 (O.G. June 4, 2002)

APPL-NO: 767834 (09)

FILED-DATE: January 24, 2001

GRANTED-DATE: December 25, 2001

PRIORITY: August 29, 1990 - 2-225321, Japan (JP)

ENGLISH-ABST:

This invention relates to a vacuum processing apparatus having vacuum processing chambers the insides of which must be dry cleaned, and to a method of operating such an apparatus. When the vacuum processing chambers are dry-cleaned, dummy substrates are transferred into the vacuum processing chamber by substrates conveyor means from dummy substrate storage means which is disposed in the air atmosphere together with storage means for storing substrates to be processed, and the inside of the vacuum processing chamber is dry-cleaned by generating a plasma. The dummy substrate is returned to the dummy substrate storage means after dry cleaning is completed. Accordingly, any specific mechanism for only the cleaning purpose is not necessary and the construction of the apparatus can be made simple. Furthermore, the dummy substrates used for dry cleaning and the substrates to be processed do not coexist, contamination of the substrates to be processed due to dust and remaining gas can be prevented and the production yield can be high.

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PN - US2001037585 A1 20011108 [US20010037585]
PN2 - US6332280 B2 20011225 [US6332280]
TI - (A1) Vacuum processing apparatus and operating method therefor
PA - (B2) HITACHI LTD (US)
PA2 - (B2) HITACHI LTD (US)
IN - (A1) TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP); KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP)
AP - US76783401 20010124 [2001US-0767834]
FD - Divsn. of: US 09461432 - 19991216 [1999US-0461432] PENDING
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Cont. of: US 09177495 - 19981023 [1998US-0177495] GRANTED
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PR - US76783401 20010124 [2001US-0767834]
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IC - (A1) F26B-013/30
EC - B41J-002/05D
B41J-002/36
B41J-002/365
C23C-014/56D
H01L-021/00S2D4
H01L-021/00S2Z
H01L-021/00S6
H01L-021/00S6B
H01L-021/00S8B
PCL - ORIGINAL (O) : 034217000; CROSS-REFERENCE (X) : 034092000
034222000 034225000 034236000 414939000 414940000 134902000
156345000
DT - Corresponding document
CT - US3652444; US3981791; US4138306; US4226897; US4311427; US4313783;
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US4563240; US4576698; US4634331; US4643629; US4705951; US4715764;
US4824309; US4836733; US4836905; US4851101; US4895107;

US4902934; US4903937; US4909695; US4911597; US4915564; US4917556;
US4923584; US4924890; US4936329; US4951601; US4969790;
US5007981; US5014217; US5292393; US5295777; US5351415; US5436848;
US5452166; US5462397; US5504033; US5504347; US5509771;
US5549435; US5556714; US5651858; US5675461; US5685684; US5766360;
US5970908; US6103055; EP20246453; EP20381338; JP5729577;
JP60246635; JP6244571; JP6250463; JP6289881; JP62207866;
JP63-133521; JP63153270; JP636582; JP6412037; JP131970; JP131971;
JP1135015; JP1251734; JP1298180; JP1310553; JP261064; JP265252;
JP294647; JP2106037; JP430549; WO8707309

R.P.H. Chang, "Multipurpose plasma reactor for materials research and processing", J. Vac. Sci. Technol., vol. 14, No. 1, Jan./Feb. 1977, pp. 278-280.

Semiconductor Equipment Association of Japan, "Terminological Dictionary of Semiconductor Equipment", front, table, p. 183, back, Nov. 20, 1987.

Semiconductor Equipment Association of Japan, "Semiconductor News", vol. 4, pp. 38-43, Apr. 10, 1987 (w/translation).

STG - (A1) Utility Patent Application published on or after January 2, 2001
STG2 - (B2) U.S. Patent (with pre-grant pub.) after Jan. 2, 2001

AB - This invention relates to a vacuum processing apparatus having vacuum processing chambers the insides of which must be dry cleaned, and to a method of operating such an apparatus. When the vacuum processing chambers are dry-cleaned, dummy substrates are transferred into the vacuum processing chamber by substrates conveyor means from dummy substrate storage means which is disposed in the air atmosphere together with storage means for storing substrates to be processed, and the inside of the vacuum processing chamber is dry-cleaned by generating a plasma. The dummy substrate is returned to the dummy substrate storage means after dry cleaning is completed. Accordingly, any specific mechanism for only the cleaning purpose is not necessary and the construction of the apparatus can be made simple. Furthermore, the dummy substrates used for dry cleaning and the substrates to be processed do not coexist, contamination of the substrates to be processed due to dust and remaining gas can be prevented and the production yield can be high.

UP - 2001-46

1 / 2 **LGST** - @LEGSTAT
PN - US 6332280 [US6332280]
AP - US 767834/01 20010124 [2001US-0767834]
DT - US-P
ACT - 20010124 US/AE-A
APPLICATION DATA (PATENT)
US 767834/01 20010124 [2001US-0767834]

20011225 US/BB
PATENT (PREVIOUS PRE-GRANT PUBLICATION)

20020604 US/RF
REISSUE APPLICATION FILED
20020201
UP - 2002-24

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ACT - 20010124 US/AE-A
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US 767834/01 20010124 [2001US-0767834]

20011108 US/A1A1
PATENT APPLICATION PUBLICATION (PRE-GRANT)
UP - 2001-47

1 / 1 CRXX - @CLAIMS/RRX
PN - 6,332,280 A 20011225 [US6332280]
PA - Hitachi Ltd JP
ACT - 20020201 REISSUE REQUESTED
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REISSUE REQUEST NUMBER: 10/060204
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PN - 6332280 A [US6332280]
OG - 2002-06-04
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Basic Patent (No,Kind,Date): EP 475604 A1 19920318 <No. of Patents: 080>

PATENT FAMILY:

GERMANY (DE)

Patent (No,Kind,Date): DE 69128861 C0 19980312
VAKUUMSBEHANDLUNGSVORRICHTUNG UND REINIGUNGSVERFAHREN DAFUER (German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829
Applie (No,Kind,Date): DE 69128861 A 19910819
IPC: * H01L-021/00
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02-107535; G 02-123844
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Language of Document: German

Patent (No,Kind,Date): DE 69128861 T2 19981008
VAKUUMSBEHANDLUNGSVORRICHTUNG UND REINIGUNGSVERFAHREN DAFUER (German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829
Applie (No,Kind,Date): DE 69128861 A 19910819
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: German

EUROPEAN PATENT OFFICE (EP)

Patent (No,Kind,Date): EP 475604 A1 19920318
VACUUM PROCESSING APPARATUS AND CLEANING METHOD THEREFOR (English;
French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829
Applie (No,Kind,Date): EP 91307625 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: ; G 92-090205
Language of Document: English

Patent (No,Kind,Date): EP 805481 A2 19971105
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;
French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 91307625 A3 19910819; JP 90225321 A
19900829
Applie (No,Kind,Date): EP 97111628 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00; C23C-014/56
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844; C 97-529274
JAPIO Reference No: * 160351C000155
Language of Document: English

Patent (No,Kind,Date): EP 856875 A2 19980805

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 97111628 A3 19910819; JP 90225321 A 19900829
Applie (No,Kind,Date): EP 98106162 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844; G 98-401136
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): EP 1076354 A2 20010214
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP); NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3 19910819; JP 90225321 A 19900829
Applie (No,Kind,Date): EP 2000121402 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): EP 1079418 A2 20010228
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP); NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3 19910819; JP 90225321 A 19900829
Applie (No,Kind,Date): EP 2000121401 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844; G 02-107535
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): EP 805481 A3 19980520
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 91307625 A3 19910819; JP 90225321 A 19900829
Applie (No,Kind,Date): EP 97111628 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00; C23C-014/56
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): EP 856875 A3 19990428
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English; French; German)

Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 97111628 A3 19910819; JP 90225321 A
19900829
Applic (No,Kind,Date): EP 98106162 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): EP 1076354 A3 20020807
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;
French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3
19910819; JP 90225321 A 19900829
Applic (No,Kind,Date): EP 2000121402 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): EP 1079418 A3 20020807
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English;
French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): EP 97111628 A3 19910819; EP 91307625 A3
19910819; JP 90225321 A 19900829
Applic (No,Kind,Date): EP 2000121401 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): EP 475604 B1 19980204
VACUUM PROCESSING APPARATUS AND CLEANING METHOD THEREFOR (English;
French; German)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); TSUBONE TSUNEHIKO (JP);
NISHIHATA KOUJI (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829
Applic (No,Kind,Date): EP 91307625 A 19910819
Designated States: (National) DE; FR; GB
IPC: * H01L-021/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English

JAPAN (JP)

Patent (No,Kind,Date): JP 4108531 A2 19920409
VACUUM TREATMENT APPARATUS (English)
Patent Assignee: HITACHI LTD
Author (Inventor): KATO SHIGEKAZU; NISHIHATA KOJI; TSUBONE TSUNEHIKO;

ITO ATSUSHI
Priority (No,Kind,Date): JP 90225321 A 19900829
Applic (No,Kind,Date): JP 90225321 A 19900829
IPC: * B01J-003/00
JAPIO Reference No: ; 160351C000155
Language of Document: Japanese
Patent (No,Kind,Date): JP 4110169 A2 19920410
IMAGE RECORDER (English)
Patent Assignee: CANON KK
Author (Inventor): SUZUKI AKIO
Priority (No,Kind,Date): JP 90228396 A 19900831
Applic (No,Kind,Date): JP 90228396 A 19900831
IPC: * B41J-002/365; B41J-002/36
JAPIO Reference No: ; 160353M000093
Language of Document: Japanese
Patent (No,Kind,Date): JP 2644912 B2 19970825
SHINKUSHORISOCHIOYOBISONONTENHOHO (English)
Priority (No,Kind,Date): JP 90225321 A 19900829
Applic (No,Kind,Date): JP 90225321 A 19900829
IPC: * B01J-003/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: Japanese
Patent (No,Kind,Date): JP 2950950 B2 19990920
Priority (No,Kind,Date): JP 90228396 A 19900831
Applic (No,Kind,Date): JP 90228396 A 19900831
IPC: * B41J-002/01; B41J-002/36
Derwent WPI Acc No: * G 94-279094
JAPIO Reference No: * 160353M000093
Language of Document: Japanese

KOREA, REPUBLIC (KR)
Patent (No,Kind,Date): KR 184682 B1 19990415
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829
Applic (No,Kind,Date): KR 9114984 A 19910829
IPC: * H01L-021/304
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: Korean
Patent (No,Kind,Date): KR 212819 B1 19990901
TRANSFERRING SYSTEM AND VACUUM TREATING APPARATUS AND METHOD THEREBY (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): NISHIHATA GOJI (JP); TSUBONE TSUNEHIKO (JP); ITO ATSUSHI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829; KR 9114984 A3 19910829
Applic (No,Kind,Date): KR 9846757 A 19981102
IPC: * H01L-021/304
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: Korean
Patent (No,Kind,Date): KR 212874 B1 19990901
TRANSFERRING SYSTEM AND VACUUM TREATING APPARATUS THEREBY (English)
Patent Assignee: HITACHI LTD (JP)

Author (Inventor): GATO SIGEGATSU (JP); NISHIHATA GOJI (JP); TSUBONE TSUNEHICO (JP); ITO ATSUSI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829; KR 9114984 A3 19910829
Applc (No,Kind,Date): KR 9846756 A 19981102
IPC: * H01L-021/304
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: Korean

UNITED STATES OF AMERICA (US)

Patent (No,Kind,Date): US 5314509 A 19940524
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): JP 90225321 A 19900829
Applc (No,Kind,Date): US 751951 A 19910829
National Class: * 034406000; 034092000; 134902000; 414225000
IPC: * B08B-003/00; C23C-016/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English

Patent (No,Kind,Date): US 5343231 A 19940830
IMAGE RECORDING APPARATUS CAPABLE OF CORRECTING DENSITY UNEVENNESS (English)

Patent Assignee: CANON KK (JP)
Author (Inventor): SUZUKI AKIO (JP)
Priority (No,Kind,Date): US 3992 A 19930115; JP 90228396 A 19900831; US 751952 B1 19910829
Applc (No,Kind,Date): US 3992 A 19930115
National Class: * 347014000; 347015000
IPC: * B41J-002/05
Derwent WPI Acc No: * G 94-279094; G 94-279094
JAPIO Reference No: * 160353M000093
Language of Document: English

Patent (No,Kind,Date): US 5349762 A 19940927
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)

Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 96256 A 19930726; JP 90225321 A 19900829; US 751951 A1 19910829
Applc (No,Kind,Date): US 96256 A 19930726
National Class: * 034406000; 034092000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English

Patent (No,Kind,Date): US 5457896 A 19951017
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)

Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 302443 A 19940909; JP 90225321 A 19900829; US 96256 A1 19930726; US 751951 A1 19910829
Applc (No,Kind,Date): US 302443 A 19940909
Addnl Info: 5349762 Patented; 5314509 Patented
National Class: * 034406000; 034092000

IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 5553396 A 19960910
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 443039 A 19950517; JP 90225321 A 19900829; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 443039 A 19950517
Addnl Info: 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000; 034092000; 414225000; 134902000
IPC: * B08B-003/00; C23C-016/00
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 5661913 A 19970902
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 593870 A 19960130; JP 90225321 A 19900829; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 593870 A 19960130
Addnl Info: 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000; 134902000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 5784799 A 19980728
VACUUM PROCESSING APPARATUS FOR SUBSTATE WAFERS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 882731 A 19970626; JP 90225321 A 19900829; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 882731 A 19970626
Addnl Info: 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034092000; 414217000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 5950330 A 19990914
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 61062 A 19980416; JP 90225321 A 19900829; US 882731 A1 19970626; US 593870 A3 19960130; US 443039

A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applc (No,Kind,Date): US 61062 A 19980416
Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;
5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6012235 A 20000111
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 177495 A 19981023; JP 90225321 A 19900829; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applc (No,Kind,Date): US 177495 A 19981023
Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;
5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6044576 A 20000404
VACUUM PROCESSING AND OPERATING METHOD USING A VACUUM CHAMBER (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 390684 A 19990907; JP 90225321 A 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applc (No,Kind,Date): US 390684 A 19990907
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented;
5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6055740 A 20000502
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 231451 A 19990115; JP 90225321 A 19900829; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applc (No,Kind,Date): US 231451 A 19990115
Addnl Info: 5784799 Patented; 5661913 Patented; 5553396 Patented;
5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034092000; 034228000
IPC: * F26B-013/30

Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6070341 A 20000606
VACUUM PROCESSING AND OPERATING METHOD WITH WAFERS, SUBSTRATES AND/OR SEMICONDUCTORS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 390681 A 19990907; JP 90225321 A 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 390681 A 19990907
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6108929 A 20000829
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 461433 A 19991216; JP 90225321 A 19900829; US 231451 A1 19990115; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 461433 A 19991216
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034092000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6112431 A 20000905
VACUUM PROCESSING AND OPERATING METHOD (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 389461 A 19990903; JP 90225321 A 19900829; US 177495 A3 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 389461 A 19990903
Addnl Info: 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English

Patent (No,Kind,Date): US 20010000048 AA 20010322
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 725257 A 20001129; JP 90225321 A
19900829; US 552572 A1 20000419; US 461432 B3 19991216; US 177495
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3
19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 725257 A 20001129
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented
National Class: * 034092000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010001901 AA 20010531
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 766976 A 20010123; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 766976 A 20010123
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010001902 AA 20010531
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829; US 766587 A3 20010123
Applic (No,Kind,Date): US 767837 A 20010124
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155

Language of Document: English
Patent (No,Kind,Date): US 20010002517 AA 20010607
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 766975 A 20010123; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 766975 A 20010123
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010003873 AA 20010621
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781296 A 20010213; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751951 A1 19910829; US 766587 A 20010123
Applic (No,Kind,Date): US 781296 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010004554 AA 20010621
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 766587 A 20010123; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 766587 A 20010123
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 438758000; 438907000
IPC: * H01L-021/31
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844

JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010004807 AA 20010628
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 780444 A 20010212; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 780444 A 20010212
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034406000; 034092000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010007175 AA 20010712
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781298 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 781298 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034417000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010008050 AA 20010719
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781293 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 781293 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034406000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G

98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010008051 AA 20010719
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781295 A 20010213; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 781295 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 034406000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010008052 AA 20010719
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781297 A 20010213; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751951 A1 19910829; US 766587 A3 20010123
Applic (No,Kind,Date): US 781297 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010009073 AA 20010726
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 766597 A 20010123; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751951 A1 19910829
Applic (No,Kind,Date): US 766597 A 20010123
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-013/30; F26B-005/04

Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010009074 AA 20010726
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781270 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 781270 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034406000
IPC: * F26B-013/30; F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010009075 AA 20010726
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781452 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 781452 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034406000
IPC: * F26B-013/30; F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010009076 AA 20010726
SUBSTRATE CHANGING-OVER MECHANISM IN A VACCUM TANK, COMPRISING (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 782194 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829
Applic (No,Kind,Date): US 782194 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented

National Class: * 034406000
IPC: * F26B-013/30; F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010010126 AA 20010802
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 782193 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 782193 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010011422 AA 20010809
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781317 A 20010213; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829
Applic (No,Kind,Date): US 781317 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034092000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010011423 AA 20010809
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 782197 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 782197 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762

Patented
National Class: * 034092000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010016990 AA 20010830
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 782192 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829; US 766587 A3 20010123
Applc (No,Kind,Date): US 782192 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-013/30; F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010020339 AA 20010913
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 780394 A 20010212; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applc (No,Kind,Date): US 780394 A 20010212
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034406000
IPC: * F26B-013/30; F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010020340 AA 20010913
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 782196 A 20010214; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829; US 766587 A3 20010123
Applc (No,Kind,Date): US 782196 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;

5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20010037585 AA 20011108
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 767834 A 20010124; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 767834 A 20010124
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 034406000; 034092000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 20020032972 AA 20020321
SUBSTRATE CHANGING-OVER MECHANISM IN VACUUM TANK (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE
TSUNEHICO (JP); ITO ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITO ATSUSHI (JP)
Priority (No,Kind,Date): US 782195 A 20010214; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829; US 766587 A3 20010123
Applic (No,Kind,Date): US 782195 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 034406000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6263588 BA 20010724
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (US)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 614770 A 20000712; JP 90225321 A
19900829; US 552572 A3 20000419; US 461432 B3 19991216; US 177495
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3
19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 614770 A 20000712
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;

5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034417000; 034229000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6301801 BA 20011016
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 552572 A 20000419; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829
Applic (No,Kind,Date): US 552572 A 20000419
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented; 5314509 Patented
National Class: * 034406000; 034092000; 034228000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6301802 BA 20011016
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (US)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 765379 A 20010122; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 765379 A 20010122
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034406000; 034417000; 034092000; 034229000; 118729000; 414744100; 414744600; 414939000; 414940000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6330755 BA 20011218
VACUUM PROCESSING AND OPERATING METHOD (English)
Patent Assignee: HITACHI LTD (US)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 461432 A 19991216; JP 90225321 A 19900829; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751951 A1 19910829
Applic (No,Kind,Date): US 461432 A 19991216
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762

Patented; 5314509 Patented
National Class: * 034406000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6330756 BA 20011218
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (US)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 614764 A 20000712; JP 90225321 A
19900829; US 552572 A3 20000419; US 461432 B3 19991216; US 177495
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3
19940909; US 96256 A1 19930726; US 751951 A1 19910829
Applic (No,Kind,Date): US 614764 A 20000712
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented
National Class: * 034406000; 034417000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6446353 BA 20020910
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781270 A 20010213; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 781270 A 20010213
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896
Patented; 5349762 Patented
National Class: * 034092000; 034060000; 034236000; 414217000;
414222130; 414939000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6463676 BA 20021015
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 780427 A 20010212; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 780427 A 20010212
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896
Patented; 5349762 Patented

National Class: * 034412000; 034092000; 034218000; 134902000;
414217000

IPC: * F26B-005/04

Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844

JAPIO Reference No: * 160351C000155

Language of Document: English

Patent (No,Kind,Date): US 6314658 BB 20011113

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)

Patent Assignee: HITACHI LTD (US)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): US 725257 A 20001129; JP 90225321 A
19900829; US 552572 A1 20000419; US 461432 B3 19991216; US 177495
A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US
593870 A3 19960130; US 443039 A1 19950517; US 302443 A3
19940909; US 96256 A1 19930726; US 751951 A1 19910829

Applic (No,Kind,Date): US 725257 A 20001129

Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented

National Class: * 034406000; 034092000; 414225000; 134902000

IPC: * F26B-005/04; B08B-003/00

Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844

JAPIO Reference No: * 160351C000155

Language of Document: English

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VACUUM PROCESSING APPARATUS (English)

Patent Assignee: HITACHI LTD (US)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): US 767834 A 20010124; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829

Applic (No,Kind,Date): US 767834 A 20010124

Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented

National Class: * 034217000; 034092000; 034222000; 034225000;
034236000; 414939000; 414940000; 134902000; 156345000

IPC: * F26B-019/00

Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844

JAPIO Reference No: * 160351C000155

Language of Document: English

Patent (No,Kind,Date): US 6339887 BB 20020122

VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)

Patent Assignee: HITACHI LTD (JP)

Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)

Priority (No,Kind,Date): US 767837 A 20010124; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829; US 766587 A3 20010123

Applic (No,Kind,Date): US 767837 A 20010124

Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented

National Class: * 034406000; 034417000; 034092000; 034229000;
118729000; 414744600; 414939000; 414940000
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6457253 BB 20021001
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781317 A 20010213; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751951 A1 19910829
Applic (No,Kind,Date): US 781317 A 20010213
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;
5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896
Patented; 5349762 Patented; 5314509 Patented
National Class: * 034092000; 414217000; 134902000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G
02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6460270 BB 20021008
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 780394 A 20010212; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 780394 A 20010212
Addnl Info: 6330755 20000801 Patented; 6012235 Patented; 5950330
Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented;
5457896 Patented; 5349762 Patented
National Class: * 034092000; 134902000; 414217000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6463678 BB 20021015
SUBSTRATE CHANGING-OVER MECHANISM IN A VACCUM TANK (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHICO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 782194 A 20010214; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751951 A1 19910829
Applic (No,Kind,Date): US 782194 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661973 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented; 5314509 Patented
National Class: * 034573000; 034526000; 034527000; 034573000;

034209000; 034217000; 414217000; 414940000
IPC: * F26B-013/10
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6467186 BB 20021022
TRANSFERRING DEVICE FOR A VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 766976 A 20010123; JP 90225321 A 19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062 A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US 443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726 ; US 751952 B1 19910829
Applic (No,Kind,Date): US 766976 A 20010123
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented; 5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762 Patented
National Class: * 034092000; 043060000; 043236000; 414217000; 414222130; 414939000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G 98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6467187 BB 20021022
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
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National Class: * 034092000; 034060000; 134085000; 134902000
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JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6470596 BB 20021029
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP); TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
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Applic (No,Kind,Date): US 767837 A 20010124
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118729000; 414744600; 414939000; 414940000
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98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6473989 BB 20021105
CONVEYING SYSTEM FOR A VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
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19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
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Applic (No,Kind,Date): US 781297 A 20010213
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5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896
Patented; 5349762 Patented
National Class: * 034092000; 034060000; 034236000; 414217000;
414222130; 414939000
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02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
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Patent (No,Kind,Date): US 6484414 BB 20021126
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
Priority (No,Kind,Date): US 781298 A 20010213; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applic (No,Kind,Date): US 781298 A 20010213
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5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896
Patented; 5349762 Patented
National Class: * 034092000; 034060000; 034236000; 414217000;
414222130; 414939000
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98-401136; G 02-107535; G 02-123844
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Patent (No,Kind,Date): US 6484415 BB 20021126
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
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19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
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Applic (No,Kind,Date): US 782193 A 20010214
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;
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National Class: * 034092000; 034060000; 034236000; 414222130;
414217000
IPC: * F26B-013/30
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JAPIO Reference No: * 160351C000155
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Patent (No,Kind,Date): US 6487791 BB 20021203
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
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Priority (No,Kind,Date): US 782196 A 20010214; JP 90225321 A
19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
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Applic (No,Kind,Date): US 782196 A 20010214
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;
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Patent (No,Kind,Date): US 6487793 BB 20021203
VACUUM PROCESSING APPARATUS AND OPERATING METHOD THEREFOR (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
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A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
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Applic (No,Kind,Date): US 766587 A 20010123
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;
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Patented; 5349762 Patented
National Class: * 034412000; 034406000; 034418000; 034500000;
034092000; 034218000; 134902000; 414939000; 414222130
IPC: * F26B-005/04
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
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JAPIO Reference No: * 160351C000155
Language of Document: English
Patent (No,Kind,Date): US 6487794 BB 20021203
SUBSTRATE CHANGING-OVER MECHANISM IN VACUUM TANK (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
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19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829; US 766587 A3 20010123
Applic (No,Kind,Date): US 782195 A 20010214
Addnl Info: 6330755 Patented; 6012235 Patented; 5950330 Patented;

5784799 Patented; 5661913 Patented; 5553396 Patented; 5457896
Patented; 5349762 Patented
National Class: * 034573000; 034526000; 034527000; 034209000;
034217000; 414217000; 414939000; 414940000
IPC: * F26B-013/10
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
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Patent (No,Kind,Date): US 6490810 BB 20021210
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
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19900829; US 461432 A3 19991216; US 177495 A1 19981023; US 61062
A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applc (No,Kind,Date): US 782197 A 20010214
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
5661913 Patented; 5553396 Patented; 5457896 Patented; 5349762
Patented
National Class: * 034092000; 414225000; 134902000
IPC: * F26B-013/30
Derwent WPI Acc No: * C 97-529274; G 92-090205; G 94-279094; G
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Patent (No,Kind,Date): US 6499229 BB 20021231
VACUUM PROCESSING APPARATUS (English)
Patent Assignee: HITACHI LTD (JP)
Author (Inventor): KATO SHIGEKAZU (JP); NISHIHATA KOUJI (JP);
TSUBONE TSUNEHIKO (JP); ITOU ATSUSHI (JP)
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A1 19980416; US 882731 A1 19970626; US 593870 A3 19960130; US
443039 A1 19950517; US 302443 A3 19940909; US 96256 A1 19930726
; US 751952 B1 19910829
Applc (No,Kind,Date): US 781293 A 20010213
Addnl Info: 6012235 Patented; 5950330 Patented; 5784799 Patented;
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National Class: * 034217000; 034092000; 034222000; 034225000;
034236000; 414939000; 414940000; 134902000; 156345000
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98-401136; G 02-107535; G 02-123844
JAPIO Reference No: * 160351C000155
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